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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,358	02/15/2001	Christopher J. Lloyd	39-227	1182

7590 02/03/2003

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EXAMINER

STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
	2877

DATE MAILED: 02/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/720,358	LLOYD, CHRISTOPHER J.
	Examiner Gordon J Stock	Art Unit 2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3-8 and 12-15 is/are rejected.
- 7) Claim(s) 2 and 9-11 is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 February 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
  - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.

- 4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1, 3-8, and 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kolber et al. (5,426,306)**.

As to **claim 1**, Kolber in a fast repetition rate fluorometer and method for measuring fluorescence parameters discloses the following: assessing the photosynthetic response via fluorescence yield of a medium to an excitation transient of a predetermined duration which causes the medium to emit a series of signals over a period of time which is long relative to the duration of the excitation transient, wherein the signals are detected, the duration of each interval between successive signals is measured, and a relationship between the excitation transient and the emission of each signal is derived to represent the characteristic response (Figs. 7c, col. 15, lines 15-67; col. 16, lines 1-50; col. 17, lines 55-60; col. 20, lines 50-65). Kolber is silent concerning the relationship relating the interval between the excitation transient and the emission of each signal to the interval between each signal and the preceding signal. However, Kolber teaches ratioing the emission and excitation in time (Figs. 7a-7c; col. 6, lines 20-30; col. 20, lines 50-65). It would be obvious to one skilled in the art at the time the invention was made that the method comprises a relationship relating the interval between the excitation transient and the

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emission of each signal to the interval between each signal and the preceding signal, for the emissions and excitations are ratioed in time.

As for **claim 3**, Kolber discloses everything as above (see **claim 1**). In addition, the excitation transient is an excitation pulse (Fig. 7a).

As for **claim 4**, Kolber discloses everything as above (see **claim 1**). In addition, the response is assessed from a single excitation transient (col. 20, lines 5-10).

As for **claim 5**, Kolber discloses everything as above (see **claim 1**). In addition, Kolber discloses the sum of the pulses of a series equals the average pulse energy times the amount of pulses (col. 13, lines 1-3) and that iterative approaches and recursive approaches are used to fit functions (cols. 16 and 17). It would be obvious to one skilled in the art at the time the invention was made that the method assesses the average photosynthetic response, for the iterations and recursions will involve the energies and intensities of a series of excitation pulses which are the sum of an average pulse.

As for **claim 6**, Kolber discloses everything as above (see **claim 1**). In addition, the signals result from excitation of fluorophores by the excitation (col. 4, lines 65-67; col. 10, lines 20-30).

As for **claim 7**, Kolber discloses everything as above (see **claim 1**). In addition, Kolber discloses the signals result from energy transfer to one species from the another species excited by the excitation (Fig. 6, col. 15, lines 15-25).

As for **claim 8**, Kolber discloses everything as above (see **claim 1**). In addition, Kolber discloses the timing of the signals is determined from a predetermined portion of each signal (col. 10, lines 25-40).

As for **claim 12**, Kolber discloses everything as above (see **claim 1**). In addition, the excitation signal is ratioed with the emission signal (Fig. 7c).

As for **claim 13**, Kolber discloses everything as above (see **claim 1**). In addition, Kolber discloses conditioning the detector with the excitation that will improve signal to noise (col. 9, lines 5-50). It would be obvious to one skilled in the art at the time the invention was made that a certain property of the excitation is deconvoluted from future signals, for the detector is conditioned by the excitation.

As for **claim 14**, Kolber discloses everything as above (see **claim 1**). Kolber is silent concerning measuring the bleaching rate. However, Kolber measures fluorescence in a saturation and relaxation mode of the sample (col. 20, lines 5-20; col. 21). It would be obvious to one skilled in the art at the time the invention was made that the bleaching rate is measured for fluorescence yield is measured in the saturation and relaxation modes of the sample.

As for **claim 15**, Kohler discloses a detector (Fig. 1, **60**) and a computer and controller (Fig. 4). Kohler graphically displays the peaks and the intervals between them (Figs. 7a-7c). It would be obvious to one skilled in the art at the time the invention was made that there are means for measuring the duration of each interval, for there are graphical displays of the peaks versus time. As for the rest of the means for manipulating data and computing results, Kohler discloses a computer (Fig. 4). A computer is well-known in the art for manipulating data and computing results. It would be obvious to one skilled in the art at the time the invention was made that the means for manipulating the data and computing results is a computer for computers manipulate data.

*Allowable Subject Matter*

3. **Claims 2 and 9-11** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to **claim 2**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular method of providing a measure of the characteristic response of the medium, in combination with the rest of the limitations of **claim 2**.

As to **claim 9**, the prior art of record, taken alone or in combination, fails to disclose or render obvious the particular excitation delivery, in combination with the rest of the limitations of **claims 9-11**.

*Conclusion*

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 5,955,737 to Halliday et al.

U.S. Patent 6,121,053 to Kolber et al.

*Fax/Telephone Numbers*

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

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This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

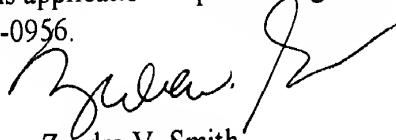
*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 308-7722*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (703) 305-4787.

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

YD  
gs  
January 22, 2003

  
Zandra V. Smith  
Primary Examiner  
Art Unit 2877